34. The device of claim **0**, wherein at least the surface of the substrate and the magnetic regions comprises a biocompatible material.

35. The device of claim 32, wherein the magnetic regions are surrounded by nonmagnetic material.

36. The device of claim 32, wherein the substrate comprises silicon.

37. The device of claim **0**, wherein the magnetic regions comprise cobalt.

38. The device of claim **0**, wherein the magnetic regions are formed using photolithography.

39. The device of claim **0**, wherein the magnetic particles are magnetic beads.

40. The device of claim **0**, wherein the magnetic particles are paramagnetic particles.

41. The device of claim **0**, wherein the magnetic particles are superparamagnetic particles.

42. The device of claim **0**, further comprising a flux circulator.

43. The device of claim **0**, further comprising a plurality of photodetectors.

44. The device of claim **0**, further comprising a microfluidic assembly.

45. The device of claim **0**, further comprising a plurality of magnetic particles.

46. The device of claim 45, wherein the magnetic particles are substantially uniform in size and shape and are magnetic beads.

47. The device of claim 45, wherein the magnetic particles are substantially uniform in size and shape and are paramagnetic beads.

48. The device of claim 45, wherein the magnetic particles are substantially uniform in size and shape and are superparamagnetic beads.

49. The device of claim 45, wherein the magnetic particles are trapped by the localized magnetic fields.

50. The device of claim 45, wherein each of a plurality of the magnetic particles comprises a detectable moiety.

51. The device of claim 50, wherein the detectable moiety comprises a fluorescent or luminescent molecule.

52. The device of claim 50, wherein the detectable moiety comprises a nucleic acid.

53. The device of claim 52, wherein the nucleic acid comprises a hybridization tag.

54. The device of claim 45, wherein each of a plurality of the magnetic particles has a probe attached thereto.

55. The device of claim 54, wherein the probe comprises a binding ligand.

56. The device of claim 54, wherein the probe comprises a nucleic acid molecule.

57. The device of claim 54, wherein the probe comprises a protein.

58. The device of claim **0**, further comprising a magnet for magnetizing and demagnetizing the magnetic regions.

59. A device for forming an array of magnetic particles, the device comprising:

a substrate comprising a plurality of magnetic regions, wherein the localized magnetic regions produce a plurality of localized magnetic fields, and wherein the magnetic regions project above the surface of the substrate.

60. The device of claim **0**, further comprising a plurality of magnetic particles.

61. The device of claim **0**, wherein the magnetic regions are substantially uniform in size and shape.

62. The device of claim **0**, wherein the magnetic regions are arranged in a pattern of mutually perpendicular rows and columns.

63. A device for forming an array of magnetic particles, the device comprising:

a nonmagnetic substrate; and

a plurality of magnetic regions located on the substrate, wherein a localized magnetic field exists between adjacent magnetic material regions when magnetized.

64. The device of claim **0**, further comprising a plurality of magnetic particles.

65. The device of claim **0**, wherein the magnetic regions are substantially uniform in size and shape.

66. The device of claim **0**, wherein the magnetic regions are arranged in a pattern of mutually perpendicular rows and columns.

67. The device of claim **0**, wherein the magnetic regions project above the surface of the substrate.

68. A device for forming an array of magnetic particles, the device comprising:

a substrate comprising a plurality of magnetic regions, wherein the magnetic regions produce a plurality of localized magnetic fields when magnetized, and wherein the localized magnetic fields generate forces sufficient to trap a magnetic particle with a trapping energy at least five times greater than the thermal energy of the particle at room temperature.

69. A randomly ordered array of magnetic particles.

70. The array of claim **0**, wherein the magnetic particles are trapped by localized magnetic fields.

71. The array of claim **0** or claim 70, wherein the magnetic particles are beads.

72. The array of claim 71, wherein each of a plurality of the magnetic particles comprises a probe.

73. The array of claim 71, wherein the beads are encoded.

74. A method of forming an array of magnetic particles comprising:

contacting the device of any of claims **0**, **0**, or **0** with a plurality of magnetic particles.

75. The method of claim **0**, wherein the plurality of magnetic particles comprises at least two populations of magnetic particles, wherein the populations are distinguishable.

76. The method of claim **0**, wherein the step of contacting comprises dispensing the magnetic particles in a fluid medium.

77. The method of claim **0**, further comprising the steps of:

removing a majority of the magnetic particles from the device; and

reusing the device in a subsequent analytical process.

78. An array formed according to the method of claim **0**.

79. A method of forming an array of magnetic particles comprising steps of:

contacting magnetic particles with a device comprising magnetic regions that produce localized magnetic fields, whereby a plurality of the magnetic particles are trapped by the localized magnetic fields.